

Identifikasi zona reservoir menggunakan pemodelan inversi 2D dan 3D data magnetotellurik di lapangan geotermal X = Identification of reservoir zone using 2D and 3D inversion modelling of magnetotelluric data in geothermal field X

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Abstrak

Lapangan geotermal X berada di area gunung A yangmana berdasarkan data geologi ditemukan adanya manifestasi berupa hot spring dan fumarole. Pengukuran MT dilakukan untuk mengetahui persebaran resistivity batuan di bawah permukaan. Pengolahan data MT dilakukan dari analisis time series dan filtering noise kemudian dilakukan Transformasi Fourier dan Robust Processing. Setelah itu baru dilakukan crosspower untuk menyeleksi data sehingga output dari proses ini berupa kurva MT. Setelah didapatkan kurva MT dilakukan koreksi statik dikarenakan kurva TE dan TM terjadi shifting. Untuk proses akhirnya baru dilakukan inversi 2D dan inversi 3D. setelah itu dilakukan perbandingan antara 2D dan 3D. Wilayah interest lapangan X berada di lintasan AA dan lintasan AB. Berdasarkan analisis 3D diidentifikasi bahwa zona alterasi menipis di wilayah upflow dan menebal ke arah outflow yangmana sesuai dengan teori. Wilayah upflow dapat diketahui dengan melihat manifestasi berupa fumarole.

The geothermal field X is located in the area of Mount A which based on geological data found the presence of hot spring and fumarole manifestations. MT measurements were carried out to determine the distribution of rock resistivity in the subsurface. MT data processing is starts from time series analysis and noise filtering then Fourier Transform and Robust Processing are performed. After that, crosspower is done to select data so that the output of this process is an MT curve. After got the MT curve then a static correction is done because the TE and TM curves are shifting. For the final process are 2D inversion and 3D inversion. After that make a comparison between 2D and 3D. The area of interest in field X is on the line AA and line AB. Based on the 3D analysis, it was identified that alteration zones thinned in the upflow region and thickened towards the outflow which is make sense with the theory.